

The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

Paper No. 60

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JAMES J. BARBER and CARL SNYDER

Appeal No. 1998-1226
Application No. 08/420,330

HEARD: May 15, 2001

Before KIMLIN, GARRIS and WALTZ, Administrative Patent Judges.
WALTZ, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 34 through 36, 39, 40, 42, 49, 53 through 57, and refusal to allow claims 50 through 52 as amended subsequent to the final rejection (see the amendment dated Dec. 9, 1996, Paper No. 45, entered as per the Advisory Action dated Jan. 2, 1997, Paper No. 47). Claims 34-36, 39, 40, 42 and 49-57 on appeal are the only claims remaining in this application.

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According to appellants, the invention is directed to a composite comprising an elastomeric matrix containing carbon fibrils, a method for the preparation of an elastomer composite, and a method for masterbatching (Brief, pages 3-4). A copy of illustrative independent claim 53 is reproduced below:

53. A composite comprising an elastomer matrix into which greater than 0 and less than 25 parts carbon fibrils per 100 parts elastomer are incorporated to enhance the mechanical properties of said elastomer, wherein said fibrils have a diameter less than about 100 nanometers and a length less than about 10,000 nanometers, and wherein the amount of fibrils in said composite permits curing of said composite by resistive or inductive heating.

The examiner has relied upon the following references in support of the rejections on appeal:

Tomoda et al. (Tomoda)	4,491,536	Jan. 1, 1985
Tennent ¹	4,663,230	May 5,
1987		
Nabeta et al. (Nabeta)	4,704,413	Nov. 3,
1987		
Geus et al. (Geus)	4,855,091	Aug. 8, 1989
Friend	5,098,771	Mar. 24, 1992
(filed Jul. 27, 1989)		

¹ We note that appellants have not contested the availability of Tennent as prior art under 35 U.S.C. § 103. Therefore we need not reach this issue in our decision.

Claims 49-57 stand rejected under 35 U.S.C. § 103 as unpatentable over Tennent in view of Geus and Tomoda (Answer, page 2). Claims 34-36, 39, 40 and 42 stand rejected under 35 U.S.C. § 103 as unpatentable over Tennent in view of Geus and Tomoda further in view of Nabeta (Answer, page 4). Claims 49-54, 56 and 57 stand rejected under the judicially created doctrine of obviousness-type double patenting as unpatentable over claims 1-34 of Friend in view of Geus and Tomoda (*id.*).² We *affirm* the examiner's rejection of claims 49-57 under section 103 over Tennent in view of Geus and Tomoda but *reverse* all other rejections. Accordingly, the examiner's decision is affirmed-in-part for reasons set forth below.

OPINION

A. The Rejection over Tennent, Geus and Tomoda

On page 7 of the Brief, appellants state that they "are aware of no reason why the rejected claims do not stand or

² The final rejection of claims 50-52 under the second paragraph of 35 U.S.C. § 112 was withdrawn by the examiner in view of appellants' amendment after the final rejection (see the Advisory Action dated Jan. 2, 1997, Paper No. 47).

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fall together." The examiner has construed this statement as meaning the claims stand or fall together (Answer, page 2, ¶7). Notwithstanding the meaning of appellants' statement, we do not find any specific, substantive arguments in the Brief for the separate patentability of any specific claims except claims 56 and 57 (see the Brief, page 10; claims 56 and 57 depend from independent claim 53). Accordingly, pursuant to the provisions of 37 CFR § 1.192(c)(7)(1995), we select claim 53 from the

grouping of claims and decide this rejection on the basis of this claim and, to the extent they are separately argued, claims 56 and 57.

The composite product recited in claim 53 on appeal requires an elastomer matrix into which greater than zero and less than 25 parts of carbon fibril per 100 parts elastomer are incorporated, wherein the fibrils have a diameter less than about 100 nanometers (nm) and a length less than about 10,000 nm, with the composite having such an amount of fibrils that curing by resistive or inductive heating is permitted. As correctly construed by the examiner, this claim does not require curing or a cured product but only a product that permissibly can be cured (see the Answer, page 3).

The examiner finds that Tennent teaches tubular carbon fibrils of 3.5 to 70 nm in diameter and a length of about 2500 nm that are useful in an electrically conductive composite with carbon and an elastomer (Answer, page 3). The examiner recognizes that Tennent does not disclose the amount of fibrils in the composite (*id.*). However, Tennent teaches that the fibrils are incorporated into the matrix to reinforce the composite and also to enhance the electrical or thermal

conductivity (col. 4, ll. 22-31). Tennent also teaches that the amount of fibrils should be "an effective electrical conductivity enhancing amount" or other amounts depending on the property desired (see col. 8, ll. 1-14). In our view, these teachings of Tennent show that the amount of fibrils loaded into the elastomer matrix was known to be a result effective variable. It is well settled that generally the optimization of a result effective variable would have been well within the ordinary skill in the art. See *In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980); *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). We note that no showing of unexpected results based on the amount of fibrils has been proffered by appellants.

The examiner applies Geus and Tomoda as secondary references to show various limitations of dependent claims, e.g., Geus teaches the advantages of a fishbone-like arrangement of the graphite layers along the axis of the filaments (Answer, page 3) but this limitation is not found in claim 53 which is the claim that is the focus of our decision. Accordingly, no further discussion of Geus is necessary to our

decision. Tomoda is applied by the examiner to, *inter alia*, show that composites may be made containing fluoroelastomers and carbon fibers (*id.*). However, in view of the teaching in Tennent that elastomers are a preferred matrix (see col. 7, ll. 48-49), it is our opinion that the specific elastomers recited in claims 56 and 57 on appeal would have been suggested to one of ordinary skill in this art by this teaching.

Appellants argue that Tennent "only generally mentions that a potential use for the fibrils is in composites having a matrix of an organic polymer" and that "Tennent does not teach or suggest fibril-filled elastomer composites" (Brief, page 9). Appellants' argument is not well taken since, as discussed above, Tennent specifically teaches that a preferred embodiment includes an elastomer matrix (col. 7, ll. 48-49).

Appellants argue that Tennent did not envision fibrils having a fishbone-like arrangement of graphite layers (Brief, paragraph bridging pages 10-11). As noted above, this limitation is not recited in claim 53 on appeal which we have selected as the basis for our decision. Appellants also argue

that "Tennent makes no mention whatsoever of the amount of fibrils" useful in elastomer composites (Brief, page 11). This argument is not well taken since, as also discussed above, Tennent does teach amounts of the fibrils, although not numerical amounts (see col. 8, ll. 1-14).

For the foregoing reasons, we determine that the examiner has presented a *prima facie* case of obviousness in view of the reference evidence. Appellants state that they have provided evidence of "surprising and unobvious results" (Brief, page 21). However, appellants have not explained why these results involve comparisons with the closest prior art, why they are commensurate in scope with the claimed subject matter, and why these results would have been truly unexpected. Appellants rely on the evidence on pages 5-6 of the specification but no specific comparisons or results have been disclosed. Based on the totality of the record, giving due consideration to appellants' arguments and evidence, we determine that the preponderance of evidence weighs most heavily in favor of obviousness. Accordingly, the examiner's rejection of claims 49 through 57 under 35 U.S.C. § 103 as unpatentable over Tennent in view of Geus and Tomoda is affirmed.

B. The Rejection over Tennent, Geus, Tomoda and Nabeta

The examiner further applies Nabeta to show the masterbatch preparation and additional compounding recited in claim 34 on appeal (Answer, page 4). The examiner finds that Nabeta teaches that "the polymer may be pre-mixed and the rest added to the composition." *Id.*, citing col. 9, ll. 1-25. The examiner concludes that it would have been obvious to modify the preparations disclosed by Tennent, Geus and Tomoda as taught by Nabeta for the advantage of keeping the carbon fibers from being damaged (*id.*). We disagree.

As correctly argued by appellants (Brief, sentence bridging pages 17-18), Nabeta does not disclose or suggest the masterbatch technique as recited in claim 34 on appeal. Nabeta only discloses that the mixture³ may be subjected to a pre-mixing process prior to the mixing and kneading step (col. 9, ll. 5-13). The examiner has not explained why this pre-mixing step of Nabeta would require the compounding of additional elastomer as recited by claim 34 on appeal. On

³ The "mixture" refers to a mixture of copolymer, plasticizer, and carbon fibers. See Nabeta, col. 8, ll. 59-67.

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this record, the examiner has not presented any convincing evidence of the masterbatching technique for carbon fibers, much less carbon fibrils, i.e., the addition of higher than desired amounts of carbon to an elastomer followed by compounding with additional elastomer to produce the desired concentration of carbon.

For the foregoing reason, we cannot sustain the examiner's rejection including Nabeta. Accordingly, the rejection of claims 34-36, 39, 40 and 42 under section 103 over Tennent in view of Geus, Tomoda and Nabeta is reversed.

C. The Rejection over Friend, Geus and Tomoda

We also cannot sustain the examiner's rejection under the judicially created doctrine of obviousness-type double patenting. The examiner's only finding with regard to Friend is "thus the patented claims are broader than the pending ones and are thus obvious as claiming duplicating [sic] subject matter." Answer, page 4. The claims of Friend recite an electrically conductive composite comprising a *polymeric* binder with carbon fibrils incorporated in an amount not greater than 30% by weight (see claim 1). Friend discloses that the polymeric binders can be thermoplastic resins such as polyurethane (see col. 3, ll. 19-32, and claims 21 and 22). However, the claims on appeal all recite an *elastomeric* matrix. Accordingly, as correctly argued by appellants on page 24 of the Brief, the composite of Friend and the claimed composite are different. On this record, the examiner has not presented any reasoning or pointed to any evidence as to why an elastomeric matrix would have been obvious over the claimed polymeric binder of Friend. As discussed above, Geus and Tomoda have not been applied to show the matrix material and

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thus fail to remedy the deficiency noted here. Accordingly, the examiner has not met the initial burden of presenting a *prima facie* case of unpatentability. Therefore the rejection of claims 49-54, 56 and 57 under the judicially created doctrine of obviousness-type double patenting over claims 1-34 of Friend in view of Geus and Tomoda is reversed.

D. Summary

The rejection of claims 49-57 under 35 U.S.C. § 103 over Tennent in view of Geus and Tomoda is affirmed. The rejection of claims 34-36, 39, 40 and 42 under 35 U.S.C. § 103 over Tennent in view of Geus, Tomoda and Nabeta is reversed. The rejection of claims 49-54, 56 and 57 under the judicially created doctrine of obviousness-type double patenting over claims 1-34 of Friend in view of Geus and Tomoda is reversed. Accordingly, the decision of the examiner is affirmed-in-part.

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No time period for taking any subsequent action in
connection with this appeal may be extended under 37 CFR
§ 1.136(a).

AFFIRMED-IN-PART

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Administrative Patent Judge)	
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)	BOARD OF PATENT
BRADLEY R. GARRIS)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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THOMAS A. WALTZ)	
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